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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted
a patent (Rule 4.17(ii)) for the following designations AE,
AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH,
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MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD,
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ning of each regular issue of the PCT Gazette.

(54) Title: HYDROENTANGLED NONWOVEN COMPOSITE STRUCTURES CONTAINING RECYCLED SYNTHETIC FI-
BROUS MATERIALS

(57) Abstract: A hydraulically entangled nonwoven composite structure that includes a matrix of substantially continuous filaments; and recycled synthetic fibers and fiber-like materials having at least one thread element composed of synthetic material with at least one irregular distortion generated by hydraulic fracture of the thread element to separate it from a bonded fibrous material while the bonded fibrous material is suspended in a liquid. This nonwoven composite structure may be used as a wiper or an absorbent material. A method of forming the nonwoven composite structure includes the steps of: (a) providing a layer of recycled synthetic fibers and fiber-like materials having at least one thread element composed of synthetic material containing at least one irregular distortion generated by hydraulic fracture of the thread element to separate it from a bonded fibrous material while the bonded fibrous material is suspended in a liquid; (b) superposing the layer of recycled fibers and fiber-like materials over a layer of substantially continuous filaments; (c) hydraulically entangling the layers to form a nonwoven web; and (d) drying the web.

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A. CLASSIFICATION OF SUBJECT MATTER

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A47K10/32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 96 06222 A (MOELNLYCKE AB ;MILDING EBBE (SE); HOLM ULF (SE); LAMMERS GERHARD () 29 February 1996 (1996-02-29) cited in the application the whole document	1-20
A	EP 0 560 556 A (OJI PAPER CO) 15 September 1993 (1993-09-15) the whole document	1-20
A	US 4 808 467 A (SUSKIND STUART P ET AL) 28 February 1989 (1989-02-28) cited in the application the whole document	1-20
A	EP 0 492 554 A (KIMBERLY CLARK CO) 1 July 1992 (1992-07-01) the whole document	1-20



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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 International Application No
 PCT/US 01/46781

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9606222	A	29-02-1996	SE 503272 C2	29-04-1996
			AT 187991 T	15-01-2000
			AU 689634 B2	02-04-1998
			AU 3358095 A	14-03-1996
			CA 2197778 A1	29-02-1996
			CN 1128309 A ,B	07-08-1996
			DE 69514108 D1	27-01-2000
			DE 69514108 T2	17-08-2000
			DK 777782 T3	10-04-2000
			EP 0777782 A1	11-06-1997
			ES 2141955 T3	01-04-2000
			FI 970756 A	21-02-1997
			GR 3032764 T3	30-06-2000
			JP 10504613 T	06-05-1998
			NO 970742 A	18-02-1997
			PT 777782 T	28-04-2000
			SE 9402804 A	23-02-1996
			WO 9606222 A1	29-02-1996
			US 6037282 A	14-03-2000
			ZA 9506813 A	19-03-1996
EP 0560556	A	15-09-1993	JP 2826586 B2	18-11-1998
			JP 5253160 A	05-10-1993
			JP 3289309 B2	04-06-2002
			JP 5277053 A	26-10-1993
			JP 2630164 B2	16-07-1997
			JP 5285083 A	02-11-1993
			JP 5286100 A	02-11-1993
			JP 6017364 A	25-01-1994
			JP 2621742 B2	18-06-1997
			JP 6017365 A	25-01-1994
			DE 69314202 D1	06-11-1997
			DE 69314202 T2	14-05-1998
			EP 0560556 A1	15-09-1993
			CA 2093985 A1	16-10-1993
US 4808467	A	28-02-1989	AT 97454 T	15-12-1993
			CA 1312493 A1	12-01-1993
			DE 3885691 D1	23-12-1993
			DE 3885691 T2	09-06-1994
			DK 510988 A	15-03-1989
			EP 0308320 A2	22-03-1989
			FI 884231 A	16-03-1989
			JP 1111056 A	27-04-1989
			NO 884088 A ,B,	16-03-1989
			PT 88511 A ,B	31-07-1989
EP 0492554	A	01-07-1992	AU 649284 B2	19-05-1994
			AU 8814991 A	25-06-1992
			BR 9105555 A	01-09-1992
			CA 2048905 A1	22-06-1992
			DE 69115002 D1	11-01-1996
			DE 69115002 T2	27-06-1996
			EP 0492554 A1	01-07-1992
			ES 2082105 T3	16-03-1996
			JP 2533260 B2	11-09-1996
			JP 5179545 A	20-07-1993
			KR 212255 B1	02-08-1999

INTERNATIONAL SEARCH REPORT

tional Application No

PCT/US 01/46781

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0492554	A	MX 9102510 A1	01-06-1992
		US 5284703 A	08-02-1994
		US 5389202 A	14-02-1995
		ZA 9109343 A	30-09-1992
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